

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claims 1-17 (cancelled)

Claim 18 (currently amended): A fin for use with tubes in a finned-tube, air-cooled heat exchanger, comprising:

 a metallic fin body with first and second heat transfer surfaces and a leading edge;

 tube collars formed in the fin body for receiving and contacting the tubes of the heat exchanger; and

 a plurality of tabs extending at a bend angle from the first and second heat transfer surfaces, wherein each of the tabs comprises a substantially planar body with a first end attached to the fin body and a second end distal and unattached to the fin body and wherein the tab bodies are positioned at offset angles, the offset angles for substantially all of the tabs being less than about 20 degrees as measured from a simple flow path extending across the fin body substantially perpendicular to the leading edge of the fin body.

Claim 19 (original): The fin of claim 18, wherein the bend angle is between about 70 and about 110 degrees as measured from the first or the second heat transfer surface.

Claim 20 (original): The fin of claim 18, wherein about 50 percent of the tabs extend from the first heat transfer surface.

Claim 21 (original): The fin of claim 18, wherein the tabs have a height as measured from the first or second heat transfer surface that is less than about two thirds of a predetermined fin separation distance for the heat exchanger.

Claim 22 (original): The fin of claim 18, wherein the tab bodies are generally square or generally rectangular in shape and include at least a partially curved shoulder at a leading edge.

Claim 23 (original): The fin of claim 18, wherein the tabs are positioned on the fin body such that the tabs are less densely distributed in a wake region near the tube collars and distal to the leading edge of the fin body.

Claim 24 (currently amended): The fin of claim 18, wherein the tabs are arranged in rows relative to the leading edge, and wherein in each of the rows a first ~~position~~ portion of the tabs extend from the first heat transfer surface and a second portion of the tabs extend from the second heat transfer surface, whereby adjacent ones of the tabs in each of the rows extend from differing ones of the first and second heat transfer surfaces.

Claim 25 (original): The fin of claim 24, wherein each of the tabs extending from a same one of the heat transfer surfaces in each of the rows is offset an offset distance relative to corresponding ones of the tabs in adjacent ones of the rows.

Claim 26 (original): The fin of claim 24, wherein adjacent ones of the rows are offset relative to each other such that the tabs in the adjacent rows are not coplanar.

Claim 27 (original): The fin of claim 18, wherein the offset angles are less than about 10 degrees.

Claim 28 (original): The fin of claim 27, wherein the offset angles differ for at least some of the tabs and the offset angles are selected to position the tab bodies substantially parallel with a plurality of predetermined local flow paths for a fluid flowing adjacent to the heat transfer surfaces.

Claim 29 (original): The fin of claim 28, wherein the tab bodies are positioned at angles of less than about 10 degrees as measured from the local flow paths.

Claims 30 and 31 (cancelled)

Claim 32 (original): The fin of claim 18, wherein a minority of the tabs are aligned at an angle relative to the majority of the tabs, the minority of tabs being positioned proximal to the tube collars and the angle being selected to direct a gas flowing over the fin body around the tube collar.

Claim 33 (original): The fin of claim 18, wherein the tabs are positioned adjacent the tube collars to disrupt heat conduction pathways in the fin body that extend substantially parallel to the leading edge away from the tube collars.

Claim 34 (cancelled)

Claim 35 (original): The fin of claim 18, wherein a subset of the tabs are positioned at offset angles greater than 20 degrees to generate turbulence in air flowing across the fin body.

Claim 36 (original): The fin of claim 18, wherein at least a subset of the tabs have a surface roughness greater than the heat transfer surfaces of the fin body to promote a transition to turbulence adjacent the portion of the tabs.

Claim 37 (original): The fin of claim 18, wherein at least a portion of the first heat transfer surface or the second heat transfer surface of the fin body has a surface treatment selected to promote turbulence adjacent the surface treated portion.

Claims 38-49 (cancelled)

Claim 50 (currently amended): A fin for use with in a heat exchanger, comprising:
a fin body with first and second sides and a leading edge;
a first set of tabs extending at a first bend angle from the first side; and
a second set of tabs extending at a second bend angle from the second side,
wherein the tabs of the first and second sets each have a first end attached to the fin body and a second end that is unattached to the fin body;

wherein a majority of the tabs are arranged with a leading edge proximate to the leading edge of the fin body and ~~within about 10 degrees of~~ substantially parallel to local flow paths in ~~[[the]]~~ an air flow passage adjacent the fin body.

Claim 51 (previously presented): The fin of claim 50, wherein the tabs are arranged in rows relative to the leading edge of the body and wherein adjacent ones of the rows are offset relative to each other.

Claim 52 (previously presented): The fin of claim 50, wherein the tabs comprise a body having a shape comprising a square, a rectangle, a trapezoid, a triangle, or a semi-circle.

Claim 53 (previously presented): The fin of claim 52, wherein the tab body is non-planar with a larger percentage of the tab body surface area located proximate to the fin body.

Claim 54 (previously presented): The fin of claim 53, wherein the tab body has an L-shaped or U-shaped cross section when viewed from the leading edge of the fin body.

Claim 55 (previously presented): The fin of claim 50, wherein the first and second bend angles are in the range of about 30 degrees to about 90 degrees.

Claim 56 (previously presented): The fin of claim 50, wherein the tabs have a tab height as measured from the fin body to an edge distal to the fin body in the range of about 25 to about 75 percent of a fin separation distance for the heat exchanger.

Claim 57 (currently amended): A fin for use with in a heat exchanger, comprising:
a fin body with first and second sides;
a plurality of heat transfer tabs provided on the fin body in a tab pattern; and
a plurality of openings in the fin body positioned adjacent each of the tabs,
wherein the tabs comprise a tab body comprising at least a portion of a material of the fin body removed to form the openings, the tab bodies being substantially planar with a subset of the tab bodies aligned parallel to a predetermined flow path for a cooling gas across the fin body when the fin is used in the heat exchanger, wherein due to the forming of the openings the fin body has a surface porosity of less than about 30 percent and has areas of higher porosity provided by the tab pattern proximate to predefined areas of high flow of a cooling gas across the fin body during operation of the heat exchanger.

Claim 58 (previously presented): The fin of claim 57, wherein a subset of the tab bodies are aligned parallel to a directional line that is transverse to an anticipated simple flow path of the heat exchanger, whereby flow is channeled across the fin in a predetermined direction.

Claim 59 (previously presented): The fin of claim 57, wherein a minority of the tabs are vortex generators and are aligned at an angle greater than 5 degrees relative to the predetermined flow path.

Claim 60 (previously presented): The fin of claim 59, wherein the minority of the tabs is positioned proximal to a wake region for the fin.

Claim 61 (previously presented): The fin of claim 57, wherein the fin body includes a leading edge and a majority of the tabs are aligned substantially perpendicular to the leading edge.

Claim 62 (cancelled)

Claim 63 (previously presented): The fin of claim 57, wherein the tab pattern is selected such that the tab bodies only extend from the first or the second side.

Claim 64 (previously presented): The fin of claim 57, wherein the tab bodies extend a tab height measured from the first or the second side of the fin body from which the tab extends, the tab height being less than about a fin separation distance for the heat exchanger.

Claim 65 (previously presented): The fin of claim 57, wherein the tab bodies extend from the fin body at a bend angle that is between about 30 and about 90 degrees.